San Joaquin River Exchange Contractors Water Authority
Assembly Water Bond Hearing
April 17, 2014

Mission Statement : *To effectively protect the Exchange Contract and maximize local water supply, flexibility and redundancy in order to maintain local control over the members' water supply, whatever circumstances occur..*

San Joaquin River Exchange Contractors Water Authority

SAN JOAQUIN RIVER EXCHANGE CONTRACTORS WATER AUTHORITY
CCID • CCC
FCWD • SLCC

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SJRECWA Participants
City Boundary
County Line
Local Canal
State Canal
Federal Canal
State/Federal Canal

STANISLAUS CO
MERCED CO
MADERA CO
FRESNO CO
SAN BENITO CO
MARIPOSA CO

Area Between Firebaugh and Mendota

N

The Exchange Contract What is it Anyway?

- The corner stone for the Development of the CVP (Friant Dam, Shasta Dam, DMC)
- Two documents were signed in 1939:

1. Exchange Contract

- Monthly Delivery Limits, Flow Limits, Water Quality Criteria, Water Supply(Shasta) Criteria [We operate under the 1967 Second Amended Contract]

2. Purchase Contract

- Conveyed high flow rights, reserved low flow rights, We have our senior water rights on the San Joaquin River

Background of the Exchange Contractors

- The SJRECWA is a Joint Powers Authority that was formed in 1992, its members include:
  - Central California Irrigation District (145,000 ac)
  - Columbia Canal Company (16,000 ac)
  - Firebaugh Canal Water District(22,000 ac)
  - San Luis Canal Company (47,000 ac)
- Main Duties:
  - Protect water rights
  - Administer AB 3030 Plans & Water Conservation Plans
  - Administer water transfers
  - Main point of contact for the administration of the Exchange Contract
  - Other duties as assigned

Background of the Exchange Contractors

- Pre-1914 and Riparian Rights on the San Joaquin and Kings Rivers dating back to the 1870's
- Irrigate approximately 240,000 ac in Fresno, Madera Merced and Stanislaus Counties.
- Normal Year allocation 840,000 acre feet
- Critical Year allocation 650,000 acre feet
- Allocation is based on Forecasted inflow into Shasta Lake

Increased Regional Water Availability

- As a result of member agency conservation programs, water service to the growers has improved and the SJRECWA has the ability to redirect water to other local water agencies.
- These savings come from large investments in both large district-wide projects and smaller on-farm conservation projects.

Due to high investment costs, we needed an innovative approach to fund these efforts.

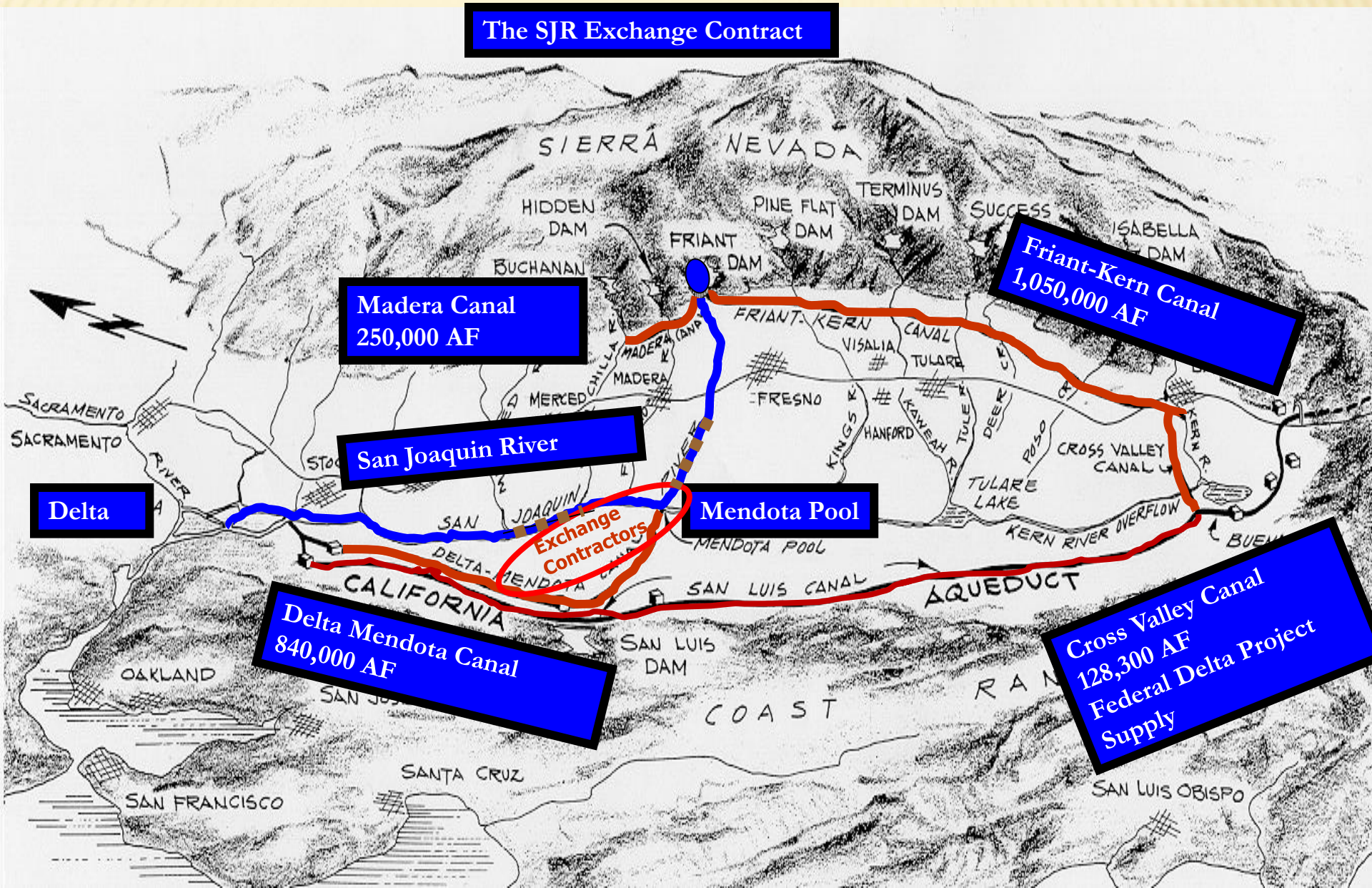
Central California Irrigation District

April 17, 2014

Central California Irrigation District

- Over 1900 Landowners, about 550 water accounts
- 145,000 acres in Fresno, Merced and Stanislaus Counties.
- 225 miles of canal delivery system.
- 250 Miles of privately owned Community ditches.
- 75 Full Time Employees
- Main Canal, Outside Canal, and Mendota Dam automated through the Districts supervisory control and data acquisition (SCADA) system.

How The Exchange Contract Works



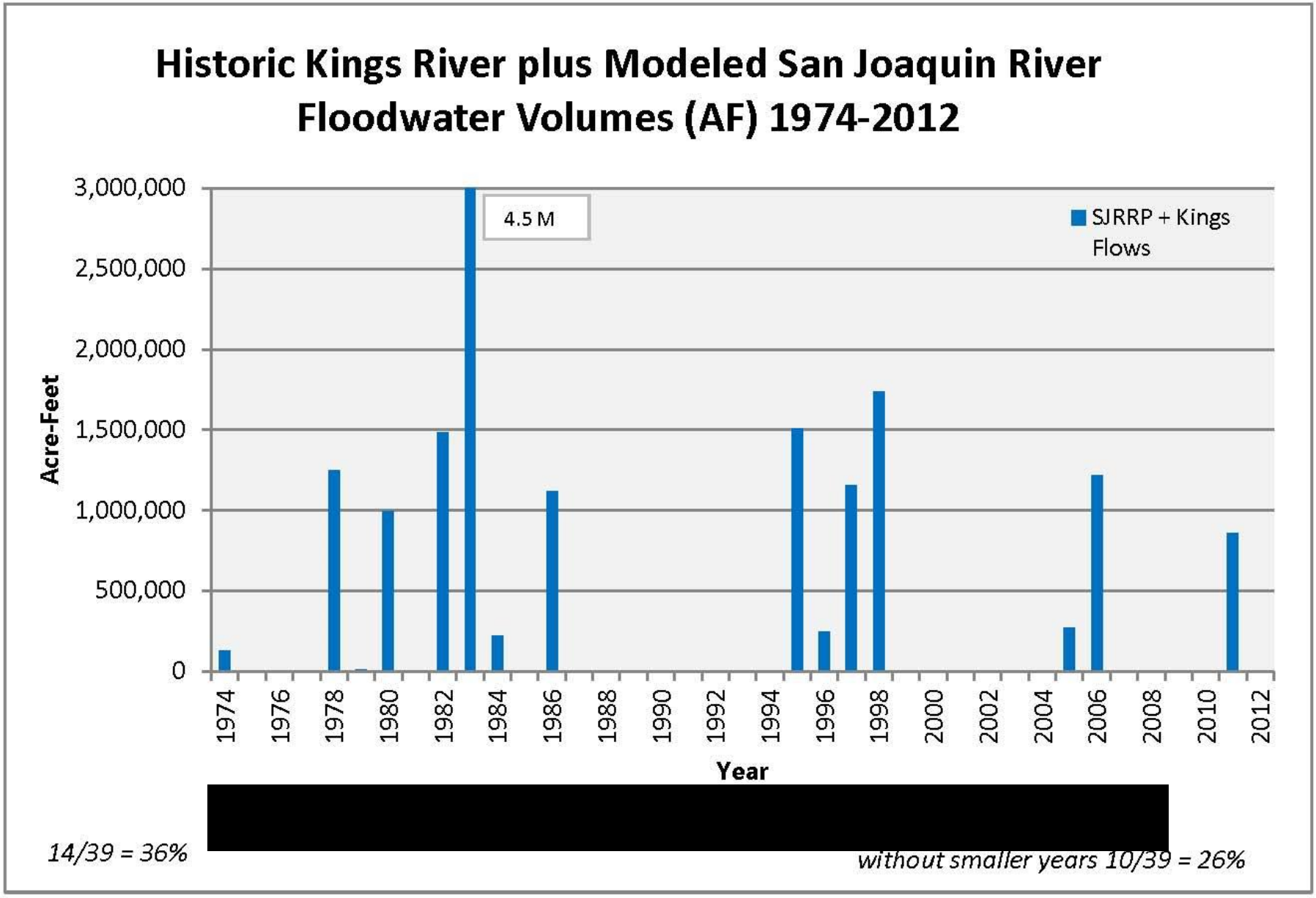
Federal Facilities
State Facilities

1960s

Water Conservation / System Modernization/ Water Resources Plan (Next 10 years)

- $17 Million Budgeted for Water Conservation Grants
- $6 Million rotating Water Conservation Loan Fund
- $20 Million budgeted for District Water Conservation Projects (Plus Grants)
- $ 36 Million budgeted for Water Resources Plan

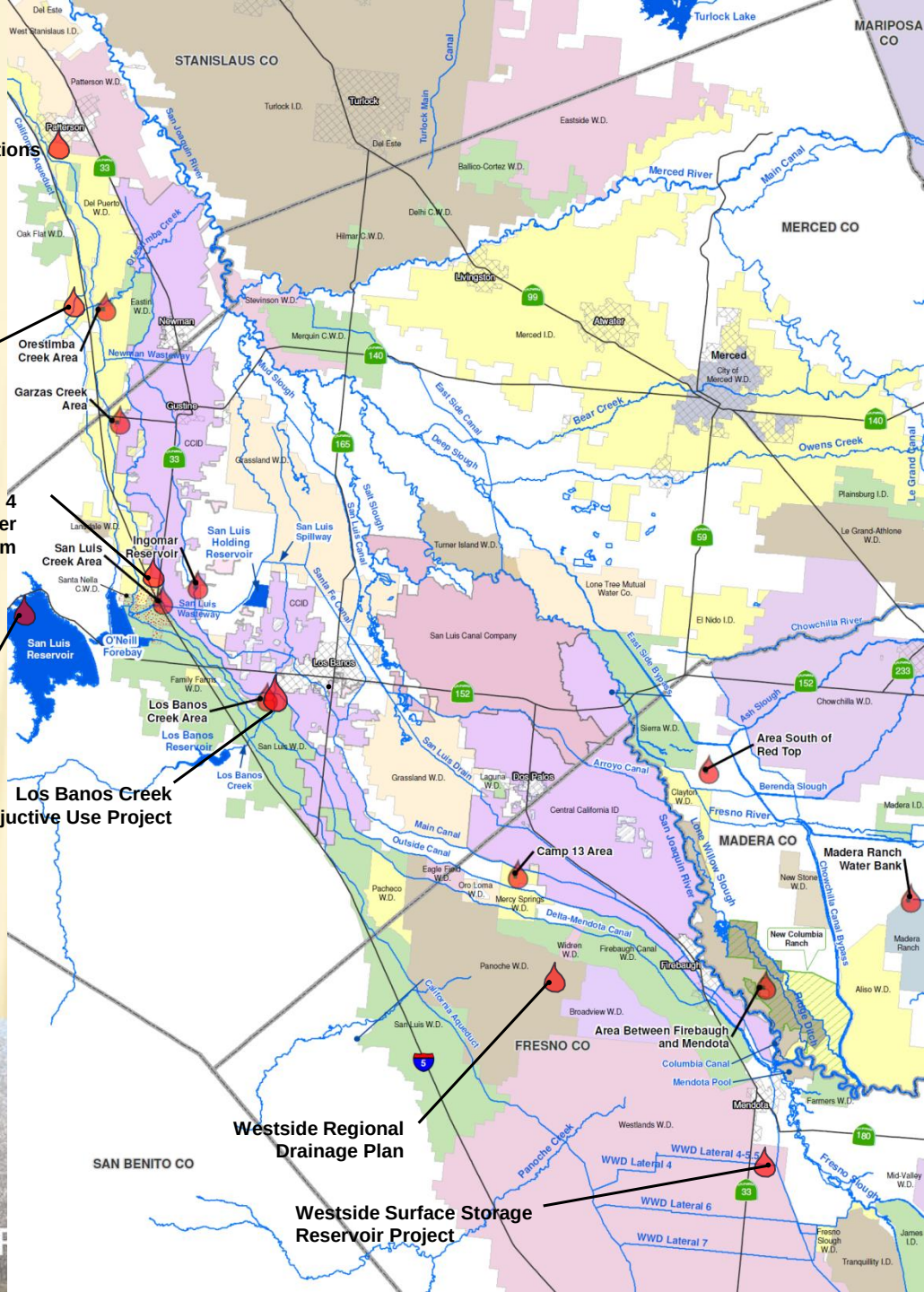
Floodwater Volumes



Water Resources Plans

- Joint Exchange Contractors Projects
  - Los Banos Creek WRP
    - City of LB, SLWD, GWD, Exchange Contractors
  - Various Water Banking Projects
    - SLWD, DPWD, Exchange Contractors
  - Internal Surface Storage
- Joint SL&DMWA Projects

Exchange Contractors & SLDMWA Projects to Evaluate



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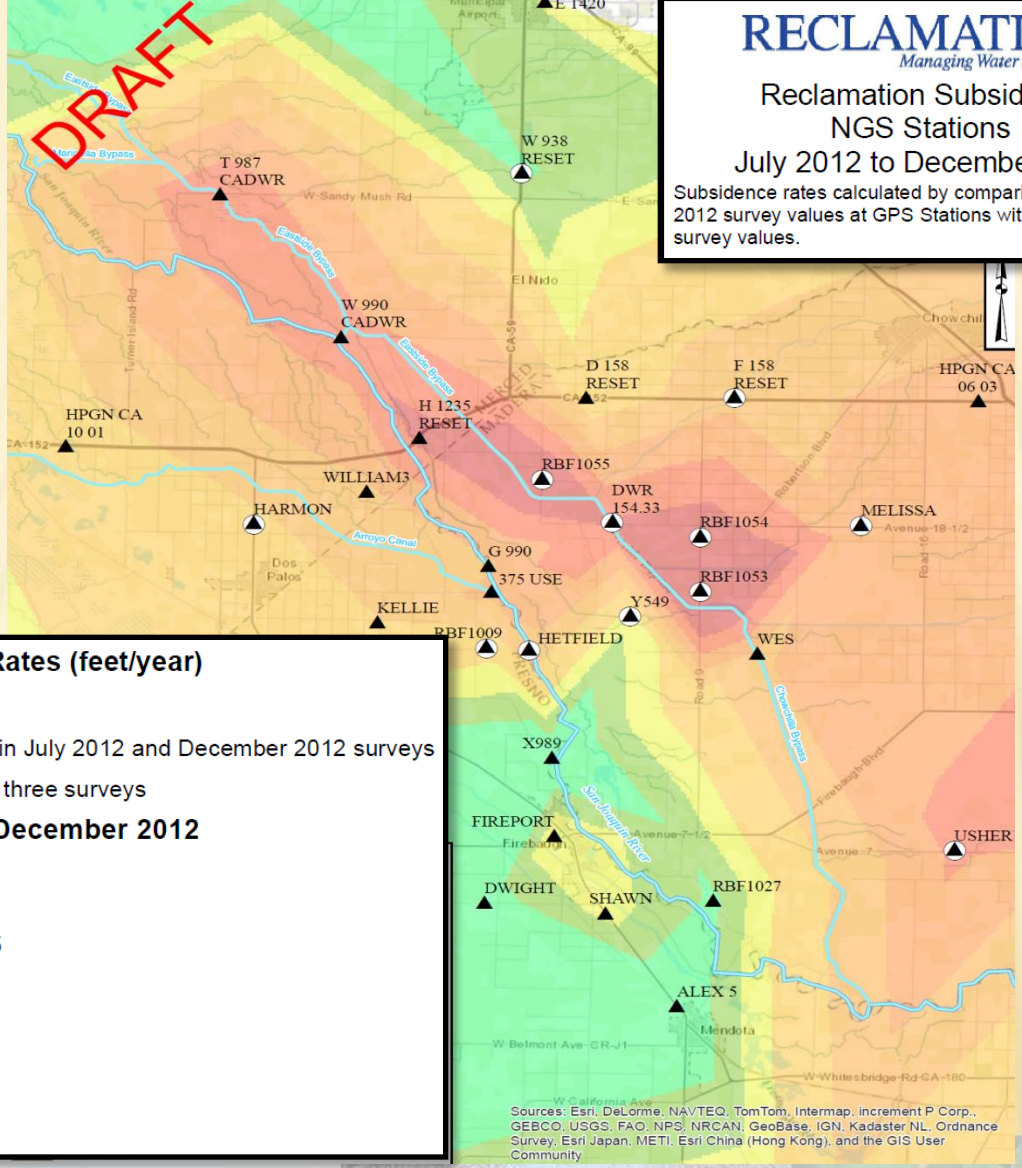
Western Madera County and Merced County

LAND SUBSIDENCE SOLUTIONS

April 17, 2014

In Association with Washington Avenue Growers, Red Top Area Growers, Merced and Madera Counties

SAN JOAQUIN RIVER EXCHANGE CONTRACTORS WATER AUTHORITY


DRAFT
RECLAMATION
Managing Water in the West
Reclamation Subsidence
NGS Stations
July 2012 to December 2012
Subsidence rates calculated by comparing December 2012 survey values at GPS Stations with July 2012 survey values.
T 987 CADWR
W 938 RESET
W 990 CADWR
D 158 RESET
F 158 RESET
HPGN CA 06 03
HPGN CA 10 01
H 1235 RESET
RBF1055
WILLIAM3
HARMON
DWR 154.33
RBF1054
MELISSA
G 990
375 USE
RBF1053
Y549
KELLIE
RBF1009
HETFIELD
WES
X989
FIREPORT
USHER
DWIGHT
SHAWN
RBF1027
ALEX 5
Mendota
Subsidence Rates (feet/year)
GPS Stations
Used only in July 2012 and December 2012 surveys
Used in all three surveys
July 2012 to December 2012
0 - +0.1
-0.05 - 0
-0.1 - -0.05
-0.2 - -0.1
-0.3 - -0.2
-0.4 - -0.3
-0.5 - -0.4
-0.6 - -0.5
Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), and the GIS User Community

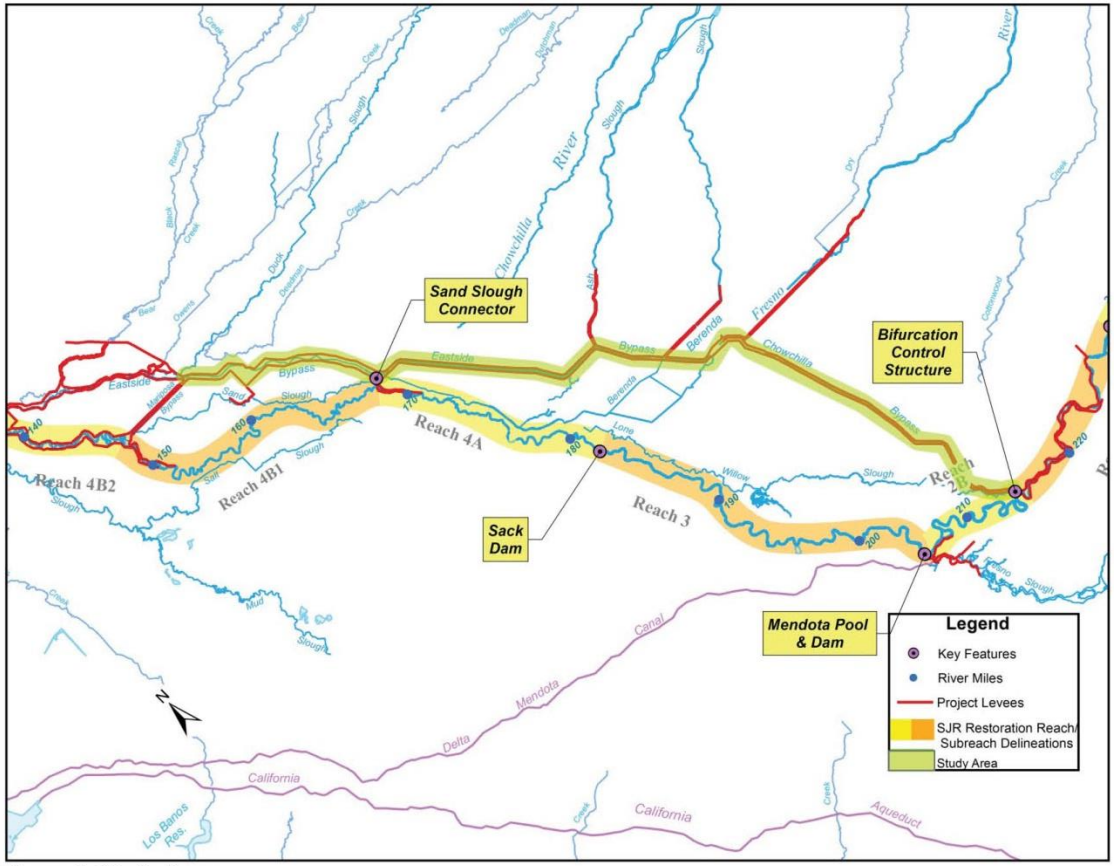
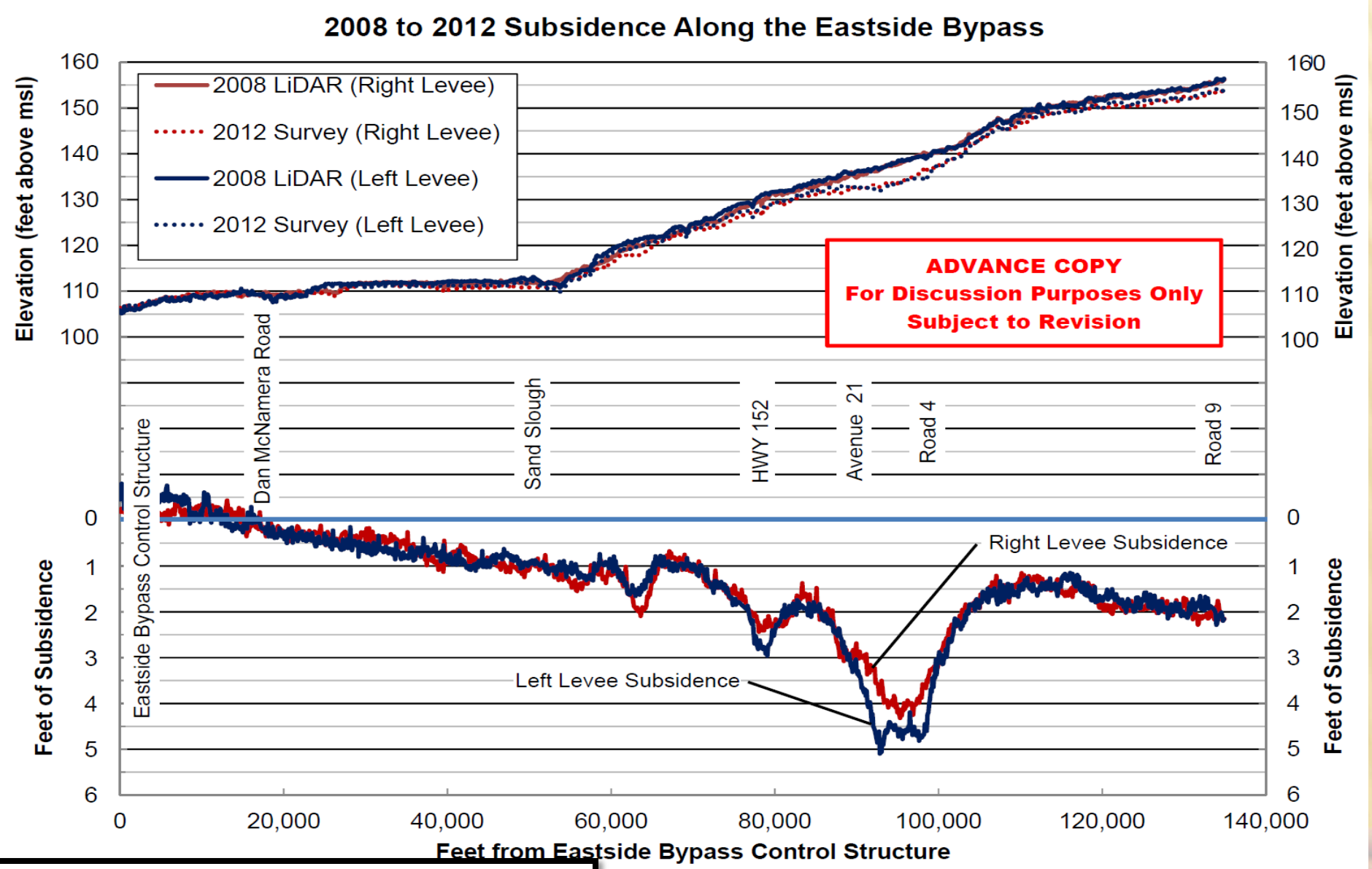


Figure 1. Study Area



San Joaquin River Exchange Contractors
Subsidence Study

Subsidence, if not stopped, will:

1. Cause flooding in Western Madera & Merced Co.s
   a) Highway 152
   b) Elementary School
   c) City of Dos Palos
   d) Valuable Farmland and Dairies

2. Jeopardize water supply of neighboring districts – up to 20% reduction in water district conveyance capacity.
   a) Central California Irrigation District
   b) San Luis Canal Company

3. Jeopardize the San Joaquin River Restoration Program

Approximate location of maximum subsidence in the United States identified by research efforts of Dr. Joseph F. Poland (pictured). Signs on pole show approximate altitude of land surface in 1925, 1955, and 1977. (28 feet in 50 years, .56 feet/year) The site is in the San Joaquin Valley southwest of Mendota, California, 15 miles southwest of Sack Dam.

Western Madera County Subsidence Area Base-map with Recharge Ponds and Conveyance Facilities

- District Boundaries
- Proposed Recharge Ponds
- Possible Pond Extension
- Proposed Recharge Areas
- Flow Direction
- Future Pipeline
- Proposed Pipeline for Vlot
- Proposed Clayton WD/Triangle T Pipeline - 24"
- Future Sierra WD Pipeline - 24"/Vlot and The Wine Group

* Design capacity is 100 cfs but currently at 60 cfs total. Triangle Ranch - 60%, Harman & Menefee - 40%.

In Association with KDS and Associates

- *Bridge
- *Inlet
- *Bypass
- *Gate Turnout
- * Pump Turnout
- Potential Turnouts
- Weir
- Future Well

* Structure information obtained from Lower San Joaquin Levee District Inspection Log - 4/2002

Existing Wells

- Existing Wells
- Upper Aquifer
- Lower Aquifer
- Composite of Upper & Lower Aquifers
- Unknown

Sierra WD · Chowchilla WD · Clayton Water District · Central California Irrigation District · New Stone Water District · Columbia Canal Co. · New Columbia Ranch · Chowchilla River · Fresno River · Berenda Slough · Ash Slough · East Side Bypass · Fresno River · Chowchilla Canal · Chowchilla Canal Bypass · Columbia Canal · San Joaquin River · Dust Hammer Canal · Arroyo Canal · Madera Co. · Fresno Co. · Pistoresi · Clark · Harris · Redtop Jerseys · Vlot · Brasil · Luis · Rocha · Baker · Harman · Wheeler · Menefee · Espinola (Haynes) · LL Ranches · Soares · Roduner (The Wine Group) · Fagundes (Vlot) · Littlefield · Clayton Family · Sack Dam · BB Limited · Triangle T Ranch (John Hancock Ins.) · Iest Dairy · POLE BARN (19 AC) · New Measuring Weir · Potential Supplemental Supply Turnout · Berenda SloughTurnout 35 cfs 200 HP Variable Speed Electric Motor · *Fresno RiverTurnout Currently 60 cfs

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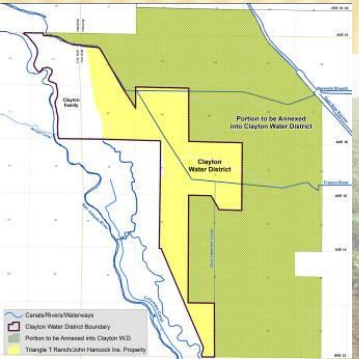
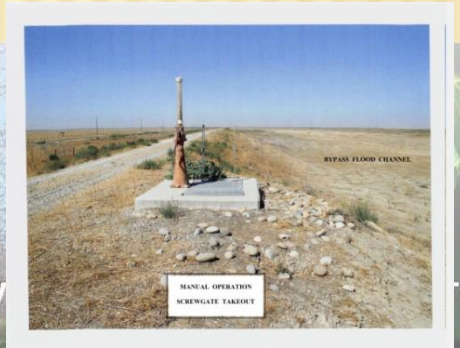
Western Madera and Merced County Subsidence Study
Long Term Solutions

- Import water at Sack Dam.
- Continue grower-driven process to revive existing districts.
- Develop Groundwater Bank for use on overlying land.
- Replace deep wells with shallow aquifer wells.
- Construct internal conveyance infrastructure improvements.
- Keep Merced and Madera Counties, and others informed.





Contact Information

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Web site: www.ccidwater.org

Exchange Contractors Water Resources Plan

- Exchange Contractor Board commissioned the initial analysis in 2011 and identified several potential projects with the goal to:
  - Provide both seasonable and multi-year flexibility.
  - Enhance local resources due to delta export reductions or failure.
  - Provide reliability if we were to receive a major portion our water from Friant Dam.

Exchange Contractors Groundwater Management

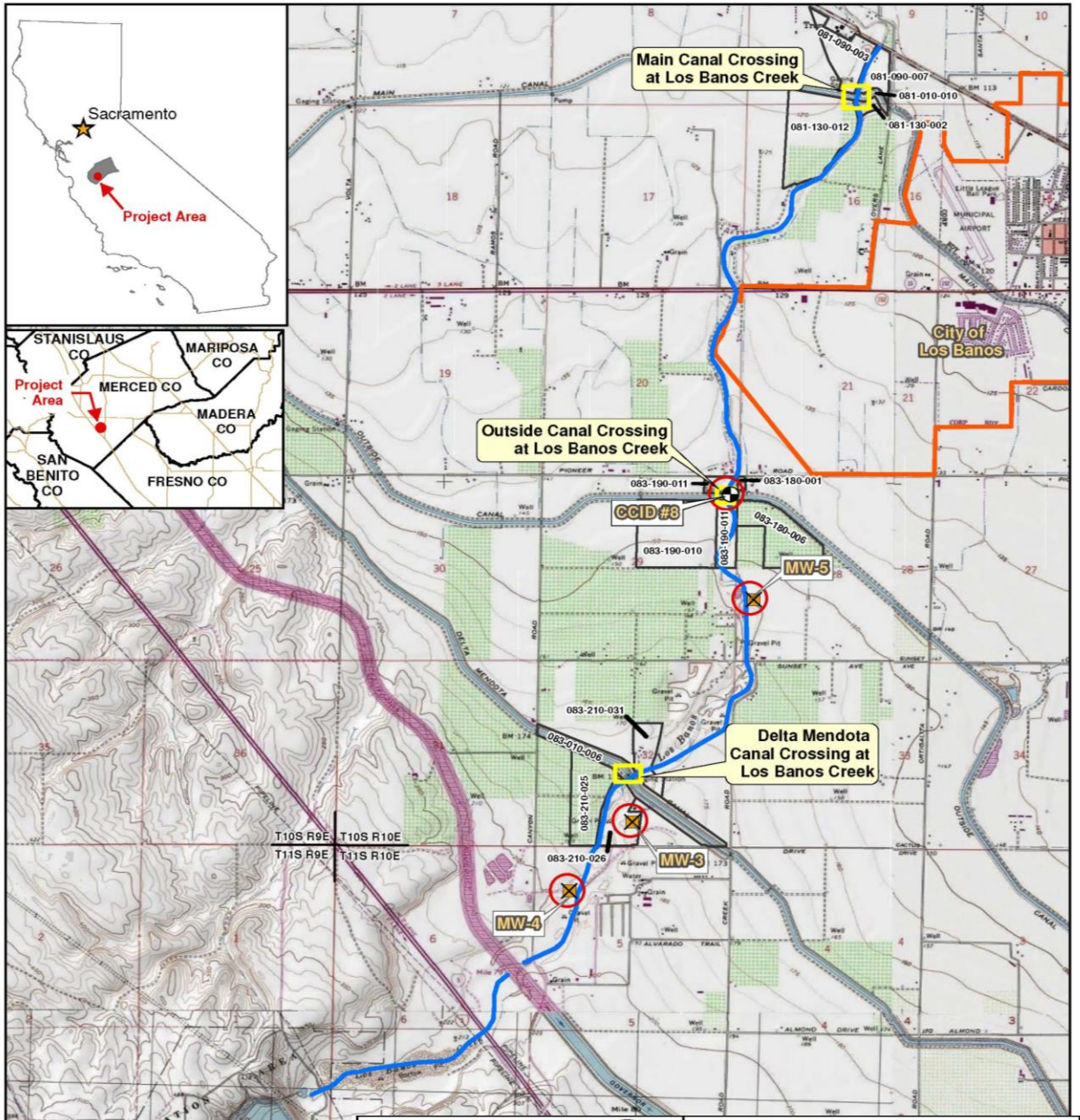
Groundwater Management

- The member agencies conjunctively manage their surface water and groundwater supplies
- The Authority has an approved AB 3030 Groundwater Management Plan since 1997
- The Authority strongly believes that local control is the best way to manage our groundwater resources.
- Subsidence Issue

Los Banos Creek Detention Dam

Background

- Owned by US Bureau of Reclamation.
- Operated by State of California Department of Water Resources.
- Operational in 1962.
- Normal Gross Area: 470 Acres
- Max Storage Capacity: 34,600 AF
- Historic Operational Capacity: 20,600 AF



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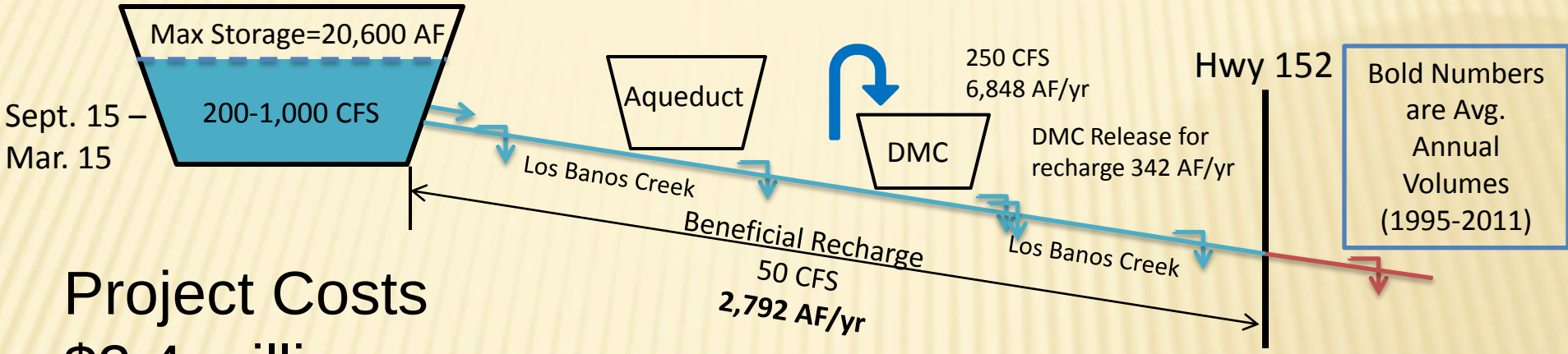
Los Banos Creek Topographic Map

Figure 1-1

San Joaquin River Exchange Contractors Authority

Proposed Project – Average Annual Yield = 6,848 Acre Feet
Range 0 to 30,000 Acre Feet



Project Costs
$2.4 million

LBC Control Weir and Gravity Inlets to capture LBCDR releases into the DMC.

Quantification of Los Banos Creek Channel recharge from LBCDR to Highway 152.

San Joaquin River Exchange Contractors Water Authority

Initial Recharge and Recovery Projects

Summary of Estimated Groundwater Storage Capacity

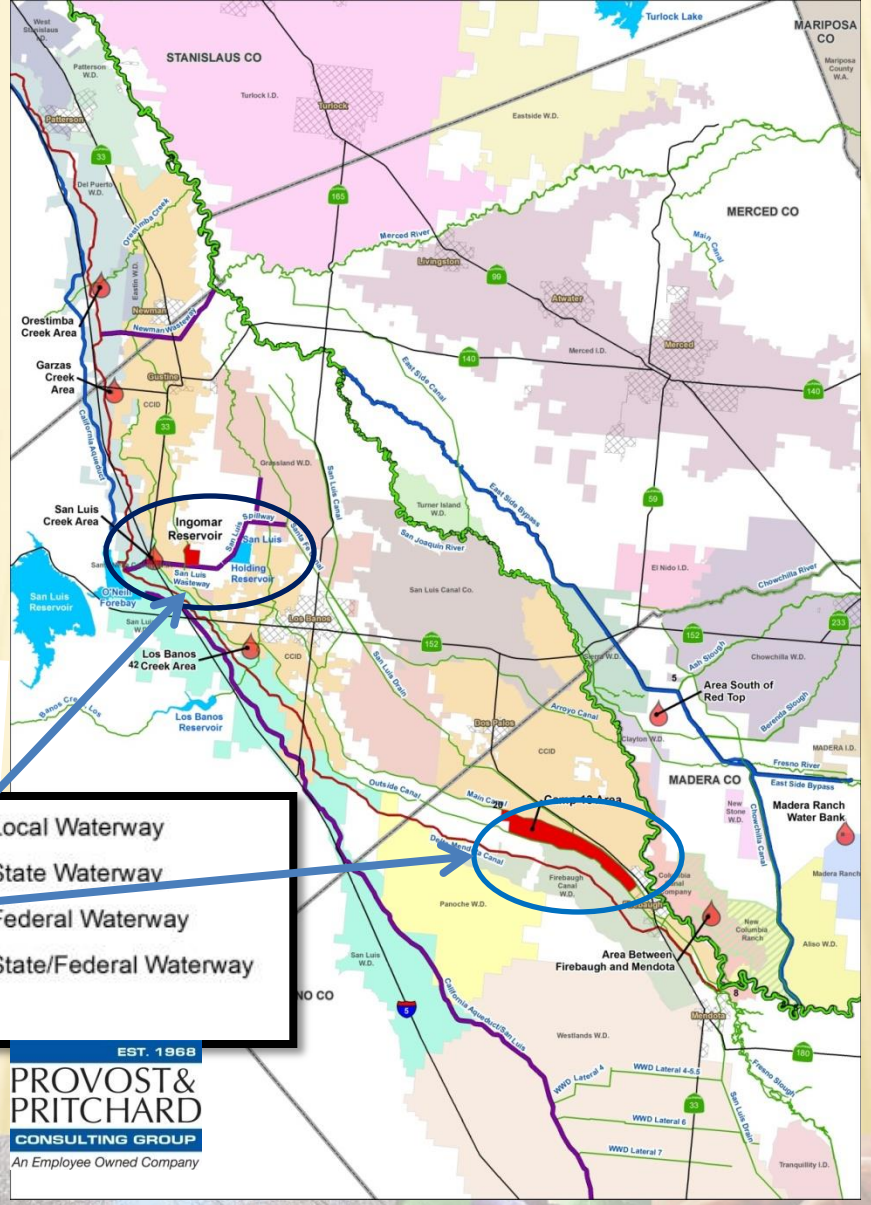
Kenneth D. Schmidt & Associates – January 2011

Area	Recharge Capacity (AF/yr)		Underground Storage Capacity (AF)
	Intentional Recharge	In-Lieu	
Orestimba Creek	20,000	2,000	25,000
Garzas Creek	3,000	0	<10,000
Santa Nella	5,000	0	2,500-7,500[1]
Los Banos Creek	10,000	10,000	15,000-35,000[2]
B&B Ranch	5,000	0	10,000
East of Firebaugh	3,000	0	<7,000
New Columbia Ranch	16,000	11,000	80,000-130,000
Red Top	3,000	0	20,000-30-000
Total	**65,000**	**23,000**	**153,000-250,000**

[1] Greater space would be available if the shallow groundwater levels were first lowered.

[2] The available storage space varies considerably, based on depth to water (i.e., wet years versus droughts).

Conceptual Pilot Water Recharge and Recovery/Surface Storage Projects



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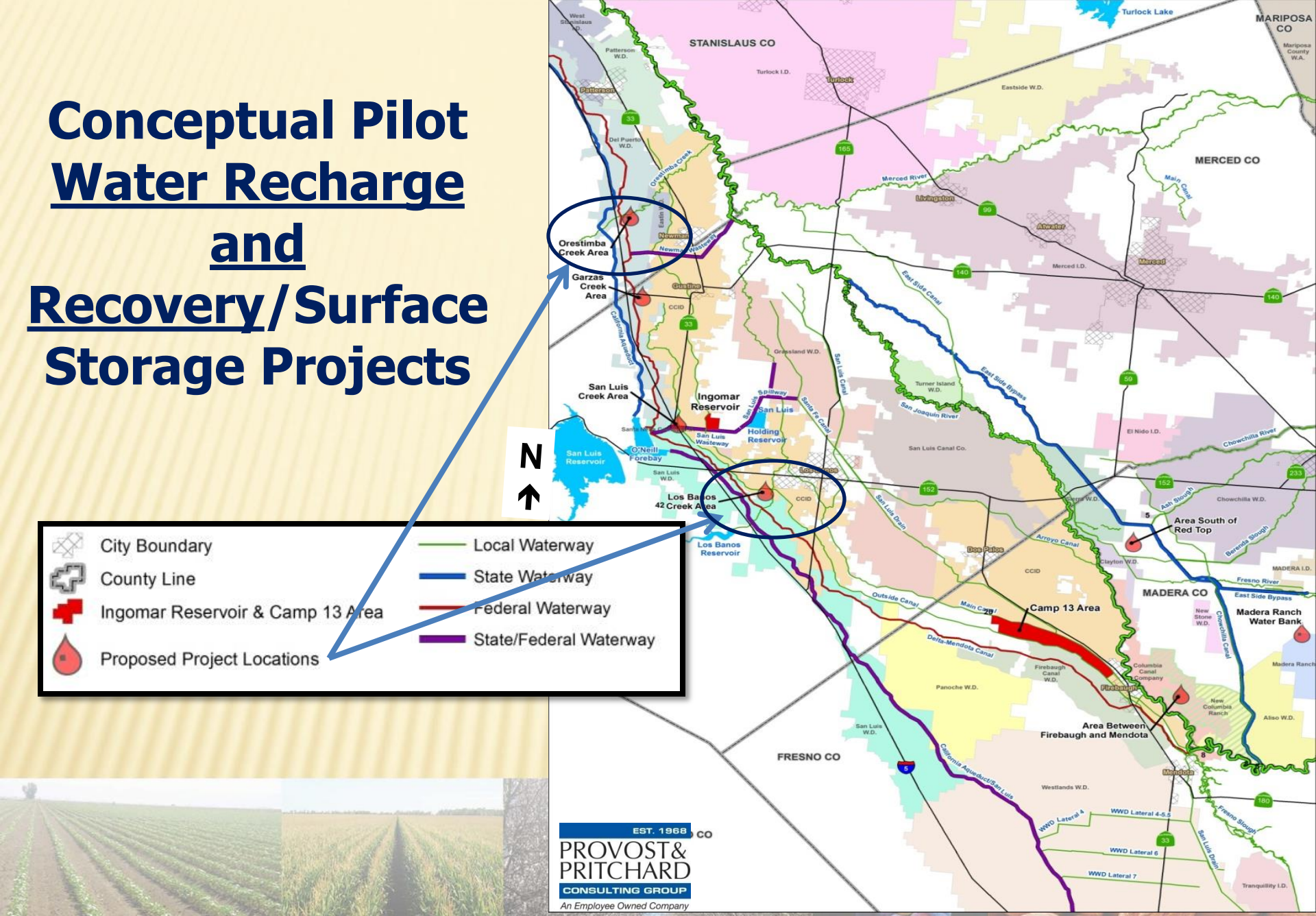
Surface Storage Projects Annual Operations Costs

(P&P Revision of AECOM Original Costs)

Surface Storage Projects						
Project Alternative	Estimated Capital Costs	Estimated Capital Annual Costs	Estimated Annual O,M & P Costs	Short Detention Storage (AF)	Long Detention Storage Amount (AF)	Estimated Water Cost Range ($/AF Short-Long Duration)*
Camp 13 (1,800 acre)	$43,867,000	$2,854,000	$219,000	11,400 AF	9,300 AF	$269/AF - $332/AF
Camp 13 (1,000 acre)	$27,423,000	$1,784,000	$137,000	6,600 AF	5,400 AF	$290/AF - $359/AF
Camp 13 (500 acre)	$15,589,000	$1,014,000	$78,000	3,300 AF	2,700 AF	$327/AF - $405/AF
Ingomar (Phase 1)	$7,701,000	$501,000	$111,000	1,100 AF	1,100 AF	$551/AF
Ingomar (Phase 2)	$10,561,000	$687,000	$187,000	2,600 AF	2,600 AF	$320/AF
Ingomar Combined	$18,262,000	$1,188,000	$298,000	3,700 AF	3,700 AF	$388/AF

* Reservoirs assumed to be operated every year

Conceptual Pilot Water Recharge and Recovery/Surface Storage Projects



Summary of Recharge and Recovery Project Capacities

1 – Kenneth D. Schmidt & Associates, 2011

Project	Avg. Annual Recharge (AF/yr)	Total Creek Recharge Potential (AF/yr)[1]	Max. Dry Year Recovery (AF/yr)	Total Underground Storage Capacity (AF)[1]
Los Banos Creek	-	-	-	-
Northern Site	1,500	-	6,900	-
Southern Site	1,500	-	6,900	-
Subtotal	3,000	10,000	13,800	15-35,000
Orestimba Creek	-	-	-	-
Small Pits	300	-	1,700	-
Large Pits	500	-	1,700	-
Riddle (40 ac)	1,000	-	3,300	-
Subtotal	1,800	20,000	6,700	25,000
Total (all projects)	4,800	30,000	20,500	40-60,000

Recharge and Recovery Projects Annual Operations

Recharge/Recovery Projects						
Project Alternative	Estimated Capital Costs	Estimated Capital Annual Costs	Estimated Annual O&M Costs	Max. Dry Year Yield (AF)[1]	Average Annual Yield (AF)	Estimated Water Cost ($/AF)[2]
Los Banos Creek Northern Site	$2,785,000	$93,000	$54,000	6,900 AF	1,500 AF	$96/AF
Los Banos Creek Southern Site	$2,241,000	$75,000	$54,000	6,900 AF	1,500 AF	$84/AF
Orestimba Riddle (20 ac)	$1,287,000	$43,000	$16,000	1,700 AF	500 AF	$131/AF
Orestimba Riddle (40 ac)	$3,411,000	$114,000	$35,000	3,300 AF	1,000 AF	$150/AF
Orestimba (small pits)	$2,189,000	$73,000	$10,000	1,700 AF	300 AF	$306/AF
Orestimba (17 ac pit)	$1,343,000	$45,000	$16,000	1,700 AF	500 AF	$135/AF
TOTAL	$13,256,000	$443,000	$185,000	22,200 AF	5,300 AF	Weighted Average $118/AF

1 - Maximum dry year yield based on recovery well capacity, and assumes sufficient water in storage.
2 - Water assumed to be delivered about once every three years. Does not include water purchase or wheeling costs.

CONTACT INFORMATION:

San Joaquin River Exchange Contractors Water Authority

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